The following is a complete listing of the claims in this application, reflects all changes currently being made to the claims, and replaces all earlier versions and all earlier listings of the claims:

1. (Currently Amended) A method of seeding an image, the image comprising a plurality of pixels, wherein said method comprises the step of:

distributing seeds in areas of ~~said~~ the image as a function of a property of ~~said~~ the pixels within those areas, wherein fewer seeds are allocated to those areas of the image having pixels homogeneous in ~~said~~ the property.

2. (Currently Amended) A method as claimed in claim 1, wherein said distribution step comprises the sub-steps of:

dividing the image into a plurality of areas;

allocating, for each divided area, one or more seeds as a function of ~~said~~ the property within the divided area and the size of the divided area as compared to the size of the image; and

storing the locations of each allocated seed.

3. (Currently Amended) A method as claimed in claim 1, wherein said distribution step comprises the sub-steps of:

selecting the image or a previously divided area of the image as the current area;

seeding the center of ~~said~~ the current area when a difference between a maximum and minimum value of ~~said~~ the property within the current area is less than a first predetermined threshold;

subdividing ~~said~~ the current area when ~~said~~ the size of ~~said~~ the current area is greater than a second predetermined threshold and ~~said~~ the difference is greater than or equal to ~~said~~ the first predetermined threshold;

uniformly seeding ~~said~~ the current area in a low density manner when ~~said~~ the size of ~~said~~ the area is less than or equal to ~~said~~ the second predetermined threshold and ~~said~~ the difference is greater than or equal to ~~said~~ the first predetermined threshold and less than a third predetermined threshold;

subdividing ~~said~~ the current area when ~~said~~ the size of ~~said~~ the area is greater than a fourth predetermined threshold and less than or equal to ~~said~~ the second predetermined threshold and ~~said~~ the difference is greater than or equal to ~~said~~ the third predetermined threshold;

uniformly seeding ~~said~~ the current area in a high density manner when ~~said~~ the size of ~~said~~ the area is less than or equal to a fourth predetermined threshold and ~~said~~ the difference is greater than or equal to ~~said~~ the third predetermined threshold; and

repeating the sub-steps of the distribution step until all of ~~said~~ the divided areas are seeded.

4. (Currently Amended) A method as claimed in claim 3, wherein said subdividing steps comprise subdividing ~~said~~ the current area into four areas.

5. (Currently Amended) A method as claimed in claim 1, wherein ~~said~~ the property of the pixels is luminance.

6. (Currently Amended) A method of seeding an image having a plurality of pixels, the method comprising the steps of:

dividing the image into one or more regions;

allocating, for each region, one or more seeds as a function of the contrast of ~~said~~ the pixels within the region and the size of the region as compared to the size of the image, wherein fewer seeds are allocated to those regions of the image having pixels of homogeneous contrast; and

storing the pixel locations of each allocated seed.

7. (Currently Amended) A method as claimed in claim 6, wherein said allocation step comprises the sub-steps of:

selecting the image or a previously divided area of the image as the current area;

seeding the center of ~~said~~ the current area when ~~said~~ the contrast within the current area is less than a first predetermined threshold;

subdividing ~~said~~ the current area when ~~said~~ the size of ~~said~~ the current area is greater than a second predetermined threshold and ~~said~~ the contrast is greater than or equal to ~~said~~ the first predetermined threshold;

uniformly seeding ~~said~~ the current area in a low density manner when ~~said~~ the size of ~~said~~ the area is less than or equal to ~~said~~ the second predetermined threshold and

- 5 -

said the contrast is greater than or equal to said the first predetermined threshold and less than a third predetermined threshold;

subdividing said the current area when said the size of said the area is greater than a fourth predetermined threshold and less than or equal to said the second predetermined threshold and said the contrast is greater than or equal to said the third predetermined threshold;

uniformly seeding said the current area in a high density manner when said the size of said the area is less than or equal to a fourth predetermined threshold and said the contrast is greater than or equal to said the third predetermined threshold; and

repeating the sub-steps of the distribution step until all of said the divided areas are seeded.

8. (Currently Amended) A method as claimed in claim 7, wherein said subdividing steps comprise subdividing said the current area into four areas.

9. (Currently Amended) A method of seeding an image comprising a plurality of pixels, wherein said method comprises the steps of:

selecting the image or a previously divided area of the image as the current area;

seeding the center of said the current area when the contrast of the pixels and the size of current area meet a first predetermined condition;

subdividing said the current area when the contrast of the pixels and the size of current area meet a second predetermined condition;

- 6 -

uniformly seeding ~~said~~ the current area in a low density manner when the contrast of the pixels and the size of current area meet a third predetermined condition;

subdividing ~~said~~ the current area when contrast of the pixels and the size of current area meet a fourth predetermined condition;

uniformly seeding ~~said~~ the current area in a high density manner when the contrast of the pixels and the size of current area meet a fifth predetermined condition; and

repeating ~~the~~ said selecting and seeding steps until all of ~~said~~ the divided areas are seeded, wherein fewer seeds are allocated to those areas of the image having homogeneous contrast.

10. (Currently Amended) A method of segmenting an image, the image comprising a plurality of pixels, wherein said method comprises the steps of:

allocating one or more pixels as seeds; ~~and~~

growing regions from ~~said~~ the seeds so as to segment the image into ~~a~~ ~~number of~~ regions, wherein a number ~~subset~~ of pixels that border ~~said~~ the regions ~~is~~ are considered, the number being smaller than a total number of pixels that border the regions, and ~~that~~ the considered pixel ~~of said subset~~ that is most similar in a property to a region ~~it~~ ~~borders~~ bordered by the considered pixel is appended to ~~that~~ the region to form an expanded region and the property of the expanded region ~~that includes the appended pixel~~ is updated; and

repeating said growing step ~~is repeated~~ until no pixels bordering the regions are available.

11. (Currently Amended) A method as claimed in claim 10, wherein ~~said~~ the property of ~~said~~ the pixels is luminance.

12. (Currently Amended) A method of segmenting an image into regions, the image comprising a plurality of pixels, ~~wherein the~~ said method ~~comprises~~ comprising the steps of:

    (a) allocating one or more pixels as seeds for the regions;

    (b) generating a list of pixels that border the regions;

    (c) scanning a subset of pixels in ~~said~~ the list of pixels, the number of pixels in the subset being smaller than the number of pixels in the list;

    (d) determining a value, for each scanned pixel, indicative of the similarity of a property of ~~said~~ the scanned pixel and the corresponding property of a region that ~~said~~ the scanned pixel borders;

    (e) selecting a scanned pixel that is most similar in the property to the region that borders the scanned pixel;

    (f) appending ~~said~~ the selected pixel to ~~said~~ the region bordered by ~~said~~ the selected pixel;

    (g) ~~updating the~~ calculating an updated property of the region ~~that includes~~ as a function of the property of the region prior to said appending step and the property of the appended pixel; and

    (h) repeating steps (b) to (g) until the image is segmented.

13. (Currently Amended) A method as claimed in claim 12, wherein said scanning step terminates if a current scanned pixel has a value below a minimum threshold and said selecting step selects ~~said~~ the current scanned pixel.

14. (Currently Amended) A method as claimed in claim 12, wherein a variable step size is used to scan ~~said~~ the list of pixels, ~~said~~ the step size being a function of the length of ~~said~~ the list of pixels, and said selection step selects a pixel having a value which is the minimum of all ~~said~~ the scanned pixels.

15. (Currently Amended) A method as claimed in claim 12, wherein ~~said~~ the property is the grey-value of ~~said~~ the pixels.

16. (Currently Amended) A method as claimed in claim 12, wherein ~~said~~ the value is determined in accordance with the following:

$$\delta(x) = \left| g(x) - \underset{y \in A_i(x)}{\text{mean}}\left[g(y) \right] \right|,$$

where g(x) is the grey value of the image point x adjoining region $A_i(x)$ and g(y) is the grey value of the image point y within region $A_i(x)$.

17. (Currently Amended) A method as claimed in claim 12, wherein ~~said~~ the value is determined in accordance with a metric in color space.

- 9 -

18. (Previously Presented) A method as claimed in claim 12, wherein said method further comprises a step of merging regions which have similarities.

19. (Currently Amended) A method as claimed in claim 18, wherein said merging step comprises the sub-steps of:

a) determining for each pair of neighboring regions a clique function value representative of the similarity of ~~said~~ the property of ~~said~~ the pair of neighboring regions;

b) selecting the pair of regions with the smallest clique function value;

c) merging both ~~said~~ the selected regions to produce a merged region and updating the merged region's clique functions with neighboring regions, if ~~said~~ the smallest clique function value is less than a predetermined threshold; and

repeating the sub-steps a) - c) of ~~the~~ said merging step until ~~said~~ the smallest clique function value is greater than or equal to ~~said~~ the threshold.

20. (Currently Amended) A method of segmenting an image, the image comprising a plurality of pixels, ~~wherein~~ said method ~~comprises~~ comprising the steps of:

allocating one or more pixels as seeds in the image; and

growing regions of pixels from ~~said~~ the seeds, wherein said growing step comprises the sub-steps of:

generating a list of pixels that border the regions;

scanning a number of ~~said~~ the pixels of the list using a step size between scanned pixels that is a function of the length of the list;

determining, for each scanned pixel, a value indicative of the similarity of the luminance of ~~said~~ the scanned pixel and the corresponding luminance of a region that ~~said~~ the scanned pixel borders;

selecting a pixel that has a minimum ~~said~~ the value;

appending ~~said~~ the selected pixel to ~~said~~ the region it borders;

updating the ~~said~~ the corresponding luminance of the region that includes the appended pixel; and

repeating the sub-steps of the growing step until there are no more pixels that border the regions.

21. (Previously Presented) A method as claimed in claim 20, wherein said selection step selects the first scanned pixel having a value below a minimum threshold.

22. (Currently Amended) A method as claimed in claim 20, wherein said selection step selects a pixel having a value which is the minimum of all ~~said~~ the scanned pixels.

23. (Currently Amended) A method as claimed in claim 20, wherein ~~said~~ the value is determined in accordance with the following:

$$\delta(x) = \left| g(x) - \underset{y \in A_i(x)}{\text{mean}}\left[g(y) \right] \right|,$$

where $g(x)$ is the grey value of the image point x adjoining region $A_i(x)$ and $g(y)$ is the grey value of the image point y within region $A_i(x)$.

24. (Previously Presented) A method as claimed in claim 20, wherein the method further comprises the step of:

merging neighboring regions to produce a merged region if their similarity is less than a predetermined threshold.

25. (Currently Amended) A method of encoding an image having a number of segmented regions, the method comprising the steps of:

splitting ~~said~~ the image into a plurality of rectangular areas, wherein each rectangular area comprises a ~~said~~ the region or part thereof forming a dominant portion of the rectangular area;

merging ~~said~~ the rectangular areas which have a common ~~said~~ the dominant portion and share a common edge; and

outputting the vertices of the merged rectangular areas as a representation of the segmented image.

26. (Currently Amended) A method as claimed in claim 25, wherein a ~~said~~ region or part thereof within a said rectangular area forms a dominant portion if the size of ~~said~~ the region or part thereof within ~~said~~ the rectangular area divided by the size of the rectangular area is greater than a predetermined threshold.

27. (Currently Amended) A method as claimed in claim 26, wherein ~~said~~ the predetermined threshold is 0.95.

28. (Currently Amended) A method as claimed in claim 25, wherein ~~said~~ the rectangular areas include one or more equilateral rectangular areas.

29. (Currently Amended) A method as claimed in claim 25, wherein said splitting step comprises:

storing the segmented image in a queue;

performing the following sub-steps until ~~said~~ the queue is empty;

removing and selecting the segmented image or a previously divided rectangular area of ~~said~~ the segmented image currently stored first in the queue as the current rectangular area;

computing a value representative of the size of ~~said~~ the dominant portion within ~~said~~ the current area divided by the size of ~~said~~ the current area;

storing the co-ordinates of the current area, if ~~said~~ the value is greater than a predetermined threshold, otherwise;

splitting ~~said~~ the current area into a plurality of rectangular areas and adding the ~~said~~ the plurality of rectangular areas to the queue.

30. (Currently Amended) A method of segmenting an image, the image comprising a plurality of pixels and the method comprising the steps of:

allocating one or more pixels as seeds;

growing regions from ~~said~~ the seeds so as to segment the image into a number of regions;

storing the segmented image in a queue; and

performing the following sub-steps until ~~said~~ the queue is empty[[;]]:

- 13 -

removing and selecting the segmented image or a previously divided

rectangular area of ~~said~~ the segmented image currently stored first in the queue as the

current rectangular area;

computing a value representative of the size of a dominant

segmented region within ~~said~~ the current area divided by the size of ~~said~~ the current area;

storing the co-ordinates of the current area, if ~~said~~ the value is

greater than a predetermined threshold, otherwise;

dividing ~~said~~ the current area into a plurality of rectangular areas and

adding the plurality of rectangular areas to the queue;

merging ~~said~~ the divided rectangular areas which have a common

dominant region and share a common edge; and

outputting the vertices of the merged rectangular areas as a

representation of the segmented image.

31.   (Currently Amended) A method as claimed in claim 30, wherein said

performing step further comprises the sub-step[[s]] of:

storing the co-ordinates of the current area, if ~~said~~ the size of the current

area is less than a predetermined size.

32.   (Currently Amended) A method as claimed in claim 30, wherein ~~said~~

the rectangular areas comprise one or more equilateral rectangular areas.

33.   (Original) A method as claimed in claim 30, wherein said dividing sub-

step comprises dividing the current area into four rectangular areas.

34. (Currently Amended) A method as claimed in claim 30, wherein ~~said~~ __the__ predetermined threshold is 0.95.

35. (Currently Amended) A method of segmenting an image, the image comprising a plurality of pixels, ~~wherein~~ said method ~~comprises~~ __comprising__ the steps of:

distributing seeds in areas of ~~said~~ __the__ image as a function of a property of ~~said~~ __the__ pixels within those areas, wherein fewer seeds are allocated to those areas of the image having pixels homogeneous in ~~said~~ __the__ property; ~~and~~

growing regions from ~~said~~ __the__ seeds so as to segment the image into a ~~number of~~ regions, wherein a __number__ ~~subset~~ of pixels that border ~~said~~ __the__ regions ~~is~~ __are__ considered, __the number being smaller than a total number of pixels that border the regions,__ and ~~that~~ __the considered__ pixel ~~of said subset__ that is most similar in ~~said~~ __a__ property to a region ~~it borders__ __bordered by the considered pixel__ is appended to ~~that~~ __the__ region __to form an expanded region__ and the property of the __expanded__ region ~~that includes the appended pixel__ is updated__;__ and

__repeating__ said growing step ~~is repeated__ until no pixels bordering the regions are available.

36. (Currently Amended) A method as claimed in claim 35, wherein said distribution step comprises the sub-steps of:

dividing the image into a plurality of areas;

allocating, for each divided area, one or more seeds as a function of ~~said~~ __the__ property within the divided area and the size of the divided area as compared to the size of the image; and

- 15 -

storing the locations of each allocated seed.

37. (Currently Amended) A method as claimed in claim 36, wherein said distribution step comprises the sub-steps of:

selecting the image or a previously divided area of the image as the current area;

seeding the center of said the current area when the difference between the maximum and minimum values of said the property of the pixels within the current area is less than a first predetermined threshold;

subdividing said the current area when said the size of said the current area is greater than a second predetermined threshold and said the difference is greater than or equal to said the first predetermined threshold;

uniformly seeding said the current area in a low density manner when said the size of said the area is less than or equal to said the second predetermined threshold and said the difference is greater than or equal to said the first predetermined threshold and less than a third predetermined threshold;

subdividing said the current area when said the size of said the area is greater than a fourth predetermined threshold and less than or equal to said the second predetermined threshold and said the difference is greater than or equal to said the third predetermined threshold;

uniformly seeding said the current area in a high density manner when said the size of said the area is less than or equal to a fourth predetermined threshold and said the difference is greater than or equal to said the third predetermined threshold; and

repeating the sub-steps of the distribution step until all of ~~said~~ the divided

areas are seeded.

38. (Currently Amended) A method as claimed in claim 37, wherein said

subdividing steps comprise subdividing ~~said~~ the current area into four areas.

39. (Currently Amended) A method as claimed in claim 35, wherein ~~said~~

the property of ~~said~~ the pixels is luminance.

40. (Currently Amended) A method as claimed in claim 35, wherein said

growing step comprises the sub-steps of:

generating a list of pixels that border the growing regions;

scanning a subset of pixels from ~~said~~ the list of pixels in a predetermined

manner;

determining a value, for each scanned pixel, indicative of the similarity of a

property of ~~said~~ the scanned pixel and the corresponding ~~said~~ the property of a growing

region that ~~said~~ the scanned pixel borders;

selecting a pixel that has a minimum ~~said~~ value;

appending ~~said~~ the selected pixel to ~~said~~ the region bordered by ~~said~~ the

selected pixel;

updating the corresponding property of the region that includes the

appended pixel; and

repeating the sub-steps of ~~the~~ said growing step until the image is

segmented.

- 17 -

41. (Currently Amended) A method as claimed in claim 40, wherein said scanning step terminates if a current scanned pixel has a value below a minimum threshold and said selecting step selects ~~said~~ the current scanned pixel.

42. (Currently Amended) A method as claimed in claim 40, wherein a variable step size is used to scan ~~said~~ the list, ~~said~~ the step size being a function of the length of ~~said~~ the list, and said selection step selects a pixel having a value which is the minimum of all ~~said~~ the scanned pixels.

43. (Currently Amended) A method as claimed in claim 35, wherein the method further comprises a step of merging ~~said~~ the regions which have similarities.

44. (Currently Amended) A method as claimed in claim 35, wherein the method further comprises the steps of:

splitting ~~said~~ the image into a plurality of rectangular areas, wherein each rectangular area comprises a region or part thereof forming a dominant portion of the rectangular area;

merging ~~said~~ the rectangular areas which have a common dominant portion and share a common edge; and

outputting the vertices of the merged rectangular areas as a representation of the segmented image.

45. (Currently Amended) A method as claimed in claim 43, wherein said merging step comprises the sub-steps of:

determining for each pair of neighboring regions a clique function value representative of the similarity of ~~said~~ the property of ~~said~~ the pair of neighboring regions;

selecting the pair of regions with the smallest clique function value;

merging both ~~said~~ the selected regions to produce a merged region and updating the merged region's clique functions with neighboring regions, if ~~said~~ the smallest clique function value is less than a predetermined threshold;

repeating the sub-steps of the merging step until ~~said~~ the smallest clique function value is greater than or equal to ~~said~~ the threshold.

46. (Currently Amended) A method of segmenting an image, the image comprising a plurality of pixels, ~~wherein~~ said method ~~comprises~~ comprising the steps of:

(a) allocating pixels as seeds in areas of the image as a function of the luminance of the pixels within those areas, wherein fewer seeds are allocated to those areas of the image having pixels of homogeneous luminance and wherein ~~said~~ the seeds form growing regions;

(b) generating a list of pixels that border the growing regions;

(c) scanning a number of ~~said~~ the pixels of the list of pixels using a step size between scanned pixels that is a function of the length of the list;

(d) determining, for each scanned pixel, a value indicative of the similarity of the luminance of ~~said~~ the scanned pixel and the corresponding luminance of a growing region that ~~said~~ the scanned pixel borders;

(e) selecting a pixel that has a minimum ~~said~~ value;

(f) appending ~~said~~ the selected pixel to ~~said~~ the growing region it borders;

(g) updating the corresponding luminance of the region that includes the appended pixel; and

(h) repeating the sub-steps (b) to (g) until there are no more pixels that border the growing regions.

47. (Currently Amended) A method as claimed in claim 45 46, wherein the method further comprises the step of:

(i) merging neighboring regions to produce a merged region if their similarity is less than a predetermined threshold.

48. (Currently Amended) Apparatus for seeding an image, the image comprising a plurality of pixels, wherein said apparatus comprises:

means for distributing seeds in areas of said the image as a function of a property of said the pixels within those areas, wherein fewer seeds are allocated to those areas of the image having pixels homogeneous in said the property.

49. (Currently Amended) Apparatus for seeding an image having a plurality of pixels, the apparatus comprising:

means for dividing the image into one or more regions;

means for allocating, for each region, one or more seeds as a function of the contrast of said the pixels within the region and the size of the region as compared to the size of the image, wherein fewer seeds are allocated to those regions of the image having pixels of homogeneous contrast; and

means for storing the pixel locations of each allocated seed.

50. (Currently Amended) Apparatus for seeding an image comprising a plurality of pixels, wherein said apparatus comprises:

means for selecting the image or a previously divided area of the image as the current area;

means for seeding the center of ~~said~~ the current area when the contrast of the pixels and the size of current area meet a first predetermined condition;

means for subdividing ~~said~~ the current area when the contrast of the pixels and the size of current area meet a second predetermined condition;

means for uniformly seeding ~~said~~ the current area in a low density manner when the contrast of the pixels and the size of current area meet a third predetermined condition;

means for subdividing ~~said~~ the current area when contrast of the pixels and the size of current area meet a fourth predetermined condition;

means for uniformly seeding ~~said~~ the current area in a high density manner when the contrast of the pixels and the size of current area meet a fifth predetermined condition; and

means for repeating the operations of the selection and seeding means until all of ~~said~~ the divided areas are seeded, wherein fewer seeds are allocated to those areas of the image having homogeneous contrast.

51. (Currently Amended) Apparatus for segmenting an image, the image comprising a plurality of pixels, wherein said apparatus comprises:

means for allocating one or more pixels as seeds; ~~and~~

means for growing regions from ~~said~~ the seeds so as to segment the image into a number of regions, wherein a ~~subset~~ number of pixels that border ~~said~~ the regions ~~is~~ are considered, the number being smaller than a total number of pixels that border the regions, and ~~that~~ the considered pixel ~~of said subset~~ that is most similar in a property to a region ~~it borders~~ bordered by the considered pixel is appended to ~~that~~ the region to form an expanded region and the property of the expanded region ~~that includes the appended pixel~~ is updated; and

means for controlling to effect repeated application of said means for growing regions ~~step performed by said growing means is repeated~~ until no pixels bordering the regions are available.

52. (Currently Amended) Apparatus for segmenting an image, the image comprising a plurality of pixels, wherein said apparatus comprises:

means for allocating one or more pixels as seeds in the image; and

means for growing regions of pixels from ~~said~~ the seeds, wherein said growing means comprises:

means for generating a list of pixels that border the regions;

means for scanning a subset of ~~said~~ the pixels of the list, the number of pixels in the subset being smaller that the number of pixels in the list;

means for determining, for each scanned pixel, a value indicative of the similarity of a property of ~~said~~ the scanned pixel and the corresponding property of a region that ~~said~~ the scanned pixel borders;

means for selecting a scanned pixel that is most similar in the property to the region that ~~said~~ the scanned pixel borders;

- 22 -

means for appending ~~said~~ the selected pixel to ~~said~~ the region

bordered by ~~said~~ the selected pixel;

means for ~~updating the corresponding~~ calculating an updated

property of the region ~~that includes the appended pixel~~ as a function of the property of the

region prior to the appending and the property of the appended pixel; and

means for repeating the operations of said growing means until there

are no more pixels that border the regions.

53. (Currently Amended) Apparatus for encoding an image having a

number of segmented regions, the apparatus comprising:

means for splitting ~~said~~ the image into a plurality of rectangular areas,

wherein each rectangular area comprises a ~~said~~ region or part thereof forming a dominant

portion of the rectangular area;

means for merging ~~said~~ the rectangular areas which have a common ~~said~~ the

dominant portion and share a common edge; and

means for outputting the vertices of the merged rectangular areas as a

representation of the segmented image.

54. (Currently Amended) Apparatus for segmenting an image, the image

comprising a plurality of pixels and the apparatus comprising:

means for allocating one or more pixels as seeds;

means for growing regions from ~~said~~ the seeds so as to segment the image

into a number of regions;

means for storing the segmented image in a queue;

- 23 -

means for removing and selecting, until ~~said~~ the queue is empty, the

segmented image or a previously divided rectangular area of ~~said~~ the segmented image

currently stored first in the queue as the current rectangular area;

means for computing a value representative of the size of the dominant

segmented region within ~~said~~ the current area divided by the size of ~~said~~ the current area;

means for storing the co-ordinates of the current area, if ~~said~~ the value is

greater than a predetermined threshold;

means for dividing ~~said~~ the current area into a plurality of rectangular areas

of ~~said~~ the current area and adding the ~~said~~ the plurality of rectangular areas to the queue, if

~~said~~ the value is less than or equal to ~~said~~ the predetermined threshold;

means for merging ~~said~~ the divided rectangular areas which have a common

dominant region and share a common edge; and

means for outputting the vertices of the merged rectangular areas as a

representation of the segmented image.

55. (Currently Amended) Apparatus for segmenting an image, the image

comprising a plurality of pixels, wherein said apparatus comprises:

means for distributing seeds in areas of ~~said~~ the image as a function of a

property of ~~said~~ the pixels within those areas, wherein fewer seeds are allocated to those

areas of the image having pixels homogeneous in ~~said~~ the property; ~~and~~

means for growing regions from ~~said~~ the seeds so as to segment the image

into ~~a number of~~ regions, wherein a ~~subset~~ number of pixels that border ~~said~~ the regions are

considered, the number being smaller than a total number of pixels that border said regions,

and ~~that~~ the considered pixel ~~of said subset~~ that is most similar in ~~said~~ a property to a

- 24 -

region ~~it borders~~ <u>bordered by the considered pixel</u> is appended to ~~that~~ the region <u>to form an</u>

<u>expanded region</u> and the property of the <u>expanded</u> region ~~that includes the appended pixel~~

is updated<u>;</u> and

means for controlling to effect repeated application of said means for

growing regions ~~is repeatedly applied~~ until no pixels bordering the regions are available.

56. (Currently Amended) Apparatus for segmenting an image, the image

comprising a plurality of pixels, wherein said apparatus comprises:

means for allocating pixels as seeds in areas of the image as a function of

the luminance of the pixels within those areas, wherein fewer seeds are allocated to those

areas of the image having pixels of homogeneous luminance and wherein ~~said~~ <u>the</u> seeds

form growing regions;

means for generating a list of pixels that border the growing regions;

means for scanning a number of ~~said~~ <u>the</u> pixels of the list of pixels using a

step size between scanned pixels that is a function of the length of the list;

means for determining, for each scanned pixel, a value indicative of the

similarity of the luminance of ~~said~~ <u>the</u> scanned pixel and the corresponding luminance of a

growing region that ~~said~~ <u>the</u> scanned pixel borders;

means for selecting a pixel that has a minimum ~~said~~ <u>the</u> value;

means for appending ~~said~~ <u>the</u> selected pixel to ~~said~~ <u>the</u> growing region it

borders;

means for updating the corresponding luminance of the region that includes

the appended pixel; and

means for repeating the operations of the allocating means, generating

means, scanning means, determining means, appending means, and updating means until

there are no more pixels that border the growing regions.

57. (Currently Amended) A computer program product, including a

computer readable medium having recorded thereon a computer program for seeding an

image, the image comprising a plurality of pixels, wherein, said computer program product

comprises:

means for distributing seeds in areas of ~~said~~ the image as a function of a

property of ~~said~~ the pixels within those areas, wherein fewer seeds are allocated to those

areas of the image having pixels homogeneous in ~~said~~ the property.

58. (Currently Amended) A computer program product, including a

computer readable medium having recorded thereon a computer program for seeding an

image having a plurality of pixels, the computer program product comprising:

means for dividing the image into one or more regions;

means for allocating, for each region, one or more seeds as a function of the

contrast of ~~said~~ the pixels within the region and the size of the region as compared to the

size of the image, wherein fewer seeds are allocated to those regions of the image having

pixels of homogeneous contrast; and

means for storing the pixel locations of each allocated seed.

59. (Currently Amended) A computer program product, including a computer readable medium having recorded thereon a computer program for seeding an image comprising a plurality of pixels, wherein said computer program product comprises:

means for selecting the image or a previously divided area of the image as the current area;

means for seeding the center of ~~said~~ the current area when the contrast of the pixels and the size of current area meet a first predetermined condition;

means for subdividing ~~said~~ the current area when the contrast of the pixels and the size of current area meet a second predetermined condition;

means for uniformly seeding ~~said~~ the current area in a low density manner when the contrast of the pixels and the size of current area meet a third predetermined condition;

means for subdividing ~~said~~ the current area when contrast of the pixels and the size of current area meet a fourth predetermined condition;

means for uniformly seeding ~~said~~ the current area in a high density manner when the contrast of the pixels and the size of current area meet a fifth predetermined condition; and

means for repeating the operations of the selection and seeding means until all of ~~said~~ the divided areas are seeded, wherein fewer seeds are allocated to those areas of the image having homogeneous contrast.

60. (Currently Amended) A computer program product, including a computer readable medium having recorded thereon a computer program for segmenting

an image, the image comprising a plurality of pixels, wherein said computer program

product comprises:

means for allocating one or more pixels as seeds; ~~and~~

means for growing regions from ~~said~~ the seeds so as to segment the image

into ~~a number of~~ regions, wherein a ~~subset~~ number of pixels that border ~~said~~ the regions ~~is~~

are considered, the number being smaller that a total number of pixels that border the

regions, and ~~that~~ the considered pixel ~~of said subset~~ that is most similar in a property to a

region ~~it borders~~ bordered by the considered pixels is appended to ~~that~~ the region to form

an expanded region and the property of the expanded region ~~that includes the appended~~

~~pixel~~ is updated; and

means for controlling to effect repeated application of said means for

growing ~~step performed by said growing means is repeated~~ regions until no pixels

bordering the regions are available.

61. (Currently Amended) A computer program product, including a

computer readable medium having recorded thereon a computer program for segmenting

an image, the image comprising a plurality of pixels, wherein said computer program

product comprises:

means for allocating one or more pixels as seeds in the image; and

means for growing regions of pixels from ~~said~~ the seeds, wherein said

growing means comprises:

means for generating a list of pixels that border the regions;

means for scanning a subset of ~~said~~ the pixels of the list, the number

of pixels in the subset being smaller than the number of pixels in the list;

- 28 -

means for determining, for each scanned pixel, a value indicative of the similarity of a property of ~~said~~ the scanned pixel and the corresponding property of a region that ~~said~~ the scanned pixel borders;

means for selecting a scanned pixel that is most similar in the property to the region that ~~said~~ the scanned pixel borders;

means for appending ~~said~~ the selected pixel to ~~said~~ the region bordered by ~~said~~ the selected pixel;

means for calculating an updated ~~updating the corresponding~~ property of the region ~~that includes~~ as a function of the property of the region prior to the appending and the property of the appended pixel; and

means for repeating the operations of said growing means until there are no more pixels that border the regions.

62. (Currently Amended) A computer program product, including a computer readable medium having recorded thereon a computer program for encoding an image having a number of segmented regions, the computer program product comprising:

means for splitting ~~said~~ the image into a plurality of rectangular areas, wherein each rectangular area comprises a ~~said~~ region or part thereof forming a dominant portion of the rectangular area;

means for merging ~~said~~ the rectangular areas which have a common ~~said~~ the dominant portion and share a common edge; and

means for outputting the vertices of the merged rectangular areas as a representation of the segmented image.

- 29 -

63. (Currently Amended) A computer program product, including a computer readable medium having recorded thereon a computer program for segmenting an image, the image comprising a plurality of pixels and the computer program product comprising:

means for allocating one or more pixels as seeds;

means for growing regions from ~~said~~ the seeds so as to segment the image into a number of regions;

means for storing the segmented image in a queue;

means for removing and selecting, until ~~said~~ the queue is empty, the segmented image or a previously divided rectangular area of ~~said~~ the segmented image currently stored first in the queue as the current rectangular area;

means for computing a value representative of the size of the dominant segmented region within ~~said~~ the current area divided by the size of ~~said~~ the current area;

means for storing the co-ordinates of the current area, if ~~said~~ the value is greater than a predetermined threshold;

means for dividing ~~said~~ the current area into a plurality of rectangular areas of ~~said~~ the current area and adding the ~~said~~ the plurality of rectangular areas to the queue, if ~~said~~ the value is less than or equal to ~~said~~ the predetermined threshold;

means for merging ~~said~~ the divided rectangular areas which have a common dominant region and share a common edge; and

means for outputting the vertices of the merged rectangular areas as a representation of the segmented image.

64. (Currently Amended) A computer program product, including a computer readable medium having recorded thereon a computer program for segmenting an image, the image comprising a plurality of pixels, wherein said computer program product comprises:

means for distributing seeds in areas of ~~said~~ the image as a function of a property of ~~said~~ the pixels within those areas, wherein fewer seeds are allocated to those areas of the image having pixels homogeneous in ~~said~~ the property; ~~and~~

means for growing regions from ~~said~~ the seeds so as to segment the image ~~into a number of~~ regions, wherein a ~~subset~~ number of pixels that border ~~said~~ the regions are considered, the number being smaller than a total number of pixels that border the regions, and ~~that~~ the considered pixel ~~of said subset~~ that is most similar in ~~said~~ a property to a region ~~it borders~~ bordered by the considered pixel is appended to ~~that~~ the region to form an expanded region, and the property of the expanded region is ~~that includes the appended pixel~~ updated; and

means for controlling to effect repeated application of said means for growing regions is repeatedly applied until no pixels bordering the regions are available.

65. (Currently Amended) A computer program product, including a computer readable medium having recorded thereon a computer program for segmenting an image, the image comprising a plurality of pixels, wherein said computer program product comprises:

means for allocating pixels as seeds in areas of the image as a function of the luminance of the pixels within those areas, wherein fewer seeds are allocated to those

areas of the image having pixels of homogeneous luminance and wherein said the seeds

form growing regions;

means for generating a list of pixels that border the growing regions;

means for scanning a number of said the pixels of the list of pixels using a

step size between scanned pixels that is a function of the length of the list;

means for determining, for each scanned pixel, a value indicative of the

similarity of the luminance of said the scanned pixel and the corresponding luminance of a

growing region that said the scanned pixel borders;

means for selecting a pixel that has a minimum said value;

means for appending said the selected pixel to said the growing region it

borders;

means for updating the corresponding luminance of the region that includes

the appended pixel; and

means for repeating the operations of said allocating means, generating

means, scanning means, determining means, appending means, and updating means until

there are no more pixels that border the growing regions.

66. (Currently Amended) A method as claimed in claim 13, wherein the

threshold is the determined value of the most recently selected pixel.

67. (Currently Amended) A method as claimed in claim 21, wherein the

threshold is the determined value of the most recently selected pixel.